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5.6: Reporting guidelines: a tool to increase completeness, transparency, and value of health research published in your journal

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"Authors, editors and publishers all have ethical obligations with regard to the publication of the results of research. Authors have a duty to make publicly available the results of their research on human subjects and are accountable for the completeness and accuracy of their reports. They should adhere to accepted guidelines for ethical reporting. Negative and inconclusive as well as positive results should be published or otherwise made publicly available. Sources of funding, institutional affiliations and conflicts of interest should be declared in the publication. Reports of research not in accordance with the principles of this Declaration should not be accepted for publication." Declaration of Helsinki - Ethical principles for medical research (www.wma.net/en/30publications/10policies/b3/index.html)

Background

Substantial evidence continues to accumulate demonstrating serious deficiencies in the reporting of research studies. The health research literature has become the most scrutinised area due to the rapid expansion in the development of systematic reviews and the direct impact the results of such reviews can have on patients' care. However, other fields, for example the veterinary sciences, are quickly catching up, indicating that reporting deficiencies may be a problem across the sciences. Box 1 highlights the key problems identified so far.[1] Despite considerable resources invested in health research, it is clear that the usability and usefulness of research results are often severely limited as a result of poor reporting in the research publication. Enormous financial and human resources are consequently wasted.[2] A coordinated effort on behalf of all parties involved in the different aspects of health related research is urgently needed to remedy the current unsustainable situation. Although ultimate responsibility for the design, conduct and accurate publication of studies lies with the researchers, journal editors play an important role in the dissemination of research findings and have the power to considerably improve the reporting quality of the research papers they publish. Some journals are already leading the way in this but all journals need to act in order to raise reporting quality across and within all clinical areas.

Box 1. Examples of common deficiencies identified in health research papers. (A list of selected references documenting the deficiencies is included in a commentary by Simera *et al.*[1])

Non-reporting (or delayed reporting) of whole studies:
- Often studies with 'disappointing' results

Incomplete reporting:
- Omission of crucial aspects of research methods (study participants, interventions, randomization in trials, etc.)
- Incomplete results: data cannot be included in meta-analysis
- Inadequate reporting of harms

Selective reporting:
- Outcomes
- Analyses (e.g. subgroups, alternative analyses)

Misleading reporting:
- Misinterpretation of study findings "spin" (e.g. presenting study in more positive way; discrepancies between abstract and full text, etc.)
- Misrepresentation of study design (e.g. study claiming it is an RCT when it is not)
- Unacknowledged discrepancies between sources of information (publication conflicts with study protocol or information in the trial register)

This chapter introduces reporting guidelines, tools that have been developed to aid completeness and transparency of research papers; describes the EQUATOR Network and its online resources for good reporting of health research; and discusses the practical aspects of implementing the use of reporting guidelines within journals.

Reporting guidelines

Reporting guidelines provide structured advice on what information needs to be included in a research article to allow readers to assess the study methodology, relevance, and validity of presented findings. The EQUATOR Network's online Library for Health Research Reporting (www.equator-network.org) currently lists

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over 200 reporting guidelines. Some of these are generic methodology guidelines for different types of study designs (e.g. randomized trials, systematic reviews, observational studies) that should always be observed when reporting this type of study. The primary focus of these guidelines is on the description of the study methods and corresponding advice on reporting the study findings. The content of each of these guidelines has been very carefully considered by multidisciplinary groups of relevant experts and stakeholders and there is a strong rationale for each item of requested information. Items range from 'simple' requests such as the identification of study design in the title or abstract (necessary for the electronic identification of studies) to items focusing on specific aspects that might introduce bias into the research (e.g. details about how participants were selected for inclusion into the study). Table 1 lists key generic methodology guidelines. The majority of the guidelines listed on the EQUATOR website, however, are more specific, providing guidance relevant to a particular medical area (e.g. reporting trials in leukaemia) or a particular aspect of research or research report (e.g. reporting of abstracts, adverse events, specific procedures, etc.). These guidelines should be ideally used in conjunction with the generic methodology focused guidelines.

Table 1. Key generic methodology guidelines

Name (guideline acronym)	Guidance for reporting	Guideline website *
CONSORT**	Randomized trials	http://www.consort-statement.org/
STROBE**	Observational studies	http://www.strobe-statement.org/
STARD	Diagnostic accuracy studies	http://www.stard-statement.org/
CHEERS	Economic evaluations	http://equator-network.org/
PRISMA**	Systematic reviews and meta-analyses	http://www.prisma-statement.org/
COREQ	Qualitative research	http://equator-network.org/
ENTREQ	Synthesis of qualitative research	http://equator-network.org/
SQUIRE	Quality improvement studies	http://squire-statement.org/

* All guidelines mentioned in the table are also included on the EQUATOR website (http://www.equator-network.org).

** A number of CONSORT, STROBE, and PRISMA extensions exist; these are all included on the EQUATOR website and the relevant website for the individual guidelines.

EQUATOR Network

The EQUATOR (Enhancing the QUAlity and Transparency Of health Research) Network was set up in 2008 to improve the reliability and usability of health research literature by facilitating transparent and complete reporting of research studies. The most important output of the EQUATOR Network is the comprehensive online collection of resources supporting responsible publication of research (the EQUATOR *Library for Health Research Reporting*). Box 2 outlines the current content of the Library. A full list of EQUATOR-listed reporting guidelines and other resources has been published[3] and an updated version will be re-published later in 2013. A regularly updated list of all resources is also available as a printable pdf file on the EQUATOR website to allow easy browsing and identification of relevant resources. EQUATOR supports the use of these resources through various education and training events.

Box 2. EQUATOR Library for health research reporting. The EQUATOR Library currently contains the following resources.

Comprehensive collection of available **reporting guidelines** indexed by:
- Study type:
  - Experimental studies
  - Observational studies
  - Diagnostic accuracy studies
  - Reliability and agreement studies
  - Systematic reviews
  - Qualitative research
  - Mixed methods studies
  - Economic evaluations
  - Quality improvement studies
  - Other reporting guidelines
- Clinical area (where specific guidelines are available)
- Sections of research reports (e.g. guidance for abstracts, statistical methods, data, images, discussions)

Other resources include:
- Reporting guidelines under development
- Reporting guidelines in other research fields (e.g. animal or veterinary research)
- Guidance on scientific writing
- Research funders' guidance on reporting requirements
- Industry sponsored research - additional guidance
- Research ethics, publication ethics and good practice guidelines
- Resources related to development and maintenance of reporting guidelines
- Examples of good research reporting

Resources specifically useful for editors include:
- Guidance developed by editorial groups
- Editorials introducing reporting guidelines
- Guidelines for peer reviewers
- Case studies: How journals implement reporting guidelines

Box 3. How to support accurate and transparent reporting of health research studies: recommendations for journal editors. (Based on Simera *et al*.[4] and Hirst and Altman[5])

What journals can do to improve the reporting quality of submitted manuscripts:

a) Incorporate an explicit philosophy of transparent, complete and accurate reporting and the use of reporting guidelines into your editorial policy.

b) Explore the available reporting guidelines on the EQUATOR website (www.equator-network.org); select well-developed guidelines appropriate for the reporting of research studies published in your journal.

c) Refer to selected guidelines in your "Instructions to Authors", ask or instruct authors to adhere to these guidelines, and motivate their use.

d) Consider including a link to the EQUATOR website as the portal for up-to-date reporting guidelines and other related resources. This will ensure that your links to guidelines are current without additional effort for your journal.

e) Publish editorials to widen awareness of the importance of good reporting and the use of reporting guidelines by authors and peer reviewers, and indicate that your editorial policies will be incorporating them.

f) Consider strategies and actions to ensure (and verify) that authors realise and assume full responsibility for the reporting quality of their studies and adhere to reporting guidelines.

What journals can do to improve the peer review of submitted manuscripts:

a) Increase transparency of your peer review process by providing your instructions to peer reviewers openly on your website. Ideally instructions should be collated in one place, made available as a printable pdf and include the date of their last revision. Consider linking to these from your instructions to authors to give your authors an indication of how their manuscript will be evaluated.

b) Alert your peer reviewers to the importance of complete and accurate reporting and the availability of reporting guidelines. Provide or link to relevant guidelines/checklists and ask peer reviewers to use them during their manuscript assessment. This will make the review more systematic and helpful for authors in revising their manuscripts.

c) If you provide training for peer reviewers consider a module on reporting guidelines and how they can be used in manuscript assessment.

d) Where provided, journals should link to resources for peer reviewers provided by their publishers.

The EQUATOR website features a dedicated section highlighting resources of most relevance to journal editors and peer reviewers. These resources support editors in setting up more rigorous policies on health research reporting within their journals, to improve the relevant parts of their instructions to authors and peer reviewers, and enable editors to learn from the experiences of other colleagues.

Box 3 outlines steps journals might consider taking to help increase the accuracy and transparency of the health research studies they publish. Practical details are discussed below.

How to select reporting guidelines for your journal

Recent years have seen a proliferation in the publication of new reporting guidelines motivated mainly by the insufficient quality of published reports. However, there are important differences in the scope, format and development methodologies of those guidelines. This creates a rather confusing situation for editors who need to know which guidelines exist and decide which to support and recommend to authors to follow.

When selecting reporting guidelines for journal endorsement editors should consider their relevance to the types of articles published in their journal. Editors should also seek the following information from the reporting guideline papers to help them judge the robustness of its recommendations. Editors should ask the following questions:
1. Is the guideline development process sufficiently transparent to explain how the recommendations were decided upon?
2. Did the guideline development involve systematic searching for the available evidence relating to the guideline recommendations?
3. Was any consensus process used as part of the guideline development?
4. Are the guideline recommendations presented in a clear way that is easy to follow and adhere to?
5. Has the guideline been evaluated or is there a plan to do so (does it have its intended effect)?

Relevant methodology focused guidelines (listed in Table 1) should be the first ones considered for implementation and journal contributors should be clearly instructed to adhere to them. Specialty journals might also consider investigating if there are any specific guidelines focusing on their clinical area of interest. Many such guidelines were developed by professional societies (e.g. Society of Interventional Radiology or Utstein style guidelines for emergency medicine) and provide very useful specific guidance facilitating better comparison of results across studies. If all key journals publishing in a particular area harmonized their instructions on research reporting it might lead to the improvement in reporting of research in that area and prevent authors from re-submitting manuscripts of substandard reporting quality until they find a publishing outlet.

How and where to use reporting guidelines in your journal

Reporting guidelines are primarily aimed at researchers writing up their studies. However, they are also invaluable tools for peer reviewers, helping to systematically check the completeness of reporting.

Clearly worded instructions to both authors and reviewers are important to set the expected level of adherence to these guidelines (e.g. "authors must follow the reporting guideline X"; or "we strongly recommend you follow reporting guideline X", etc.). Ambiguous wording (e.g. "authors might find it useful to consult the reporting guideline X") is unlikely to bring substantial results. Editors might consider asking authors to state in their methods section if they followed a reporting guideline, and if so which one. This gives readers an indication of thoroughness and at the same time the authors can be held responsible if their statement is not true.

Ensuring adherence to relevant guidelines can be difficult for editors. Invaluable help can be provided by reviewers who use the relevant checklist as part of their assessment, and highlight reporting shortcomings in a systematic way. Several journals have piloted various approaches to this in their journals and the EQUATOR website lists these as useful case studies.

Concluding remarks

Scholarly publishing of health research is currently undergoing a major transformation. Calls for open access to research findings, data sharing, and transparent and complete reporting are changing the nature of research publishing. Adopting and implementing rigorous policies on research reporting can hugely increase the value of a journal's contribution to the advancement of health research and ultimately improve patient care and can very positively impact upon a journal's reputation and business viability.

Acknowledgement

Declaration of interest

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